(ii) Activation energy.

(iii) Pseudo first order reaction. 6

(Q) Write Arrhenius equation for effect of temperature on the rate constant. 2

(R) Describe Graphical method for the determination of order of the reaction. 4

AR – 512

Second Semester B. Sc. (Part – I) Examination

(New Course)

2 S CHEMISTRY

P. Pages : 8

Time : Three Hours] [Max. Marks : 80

Note : (1) Question no. **1** is compulsory.
(2) Draw the diagrams and give equations wherever necessary.
(3) Use of scientific calculator is allowed.

1. (A) Fill in the blanks :—

(i) Soft acids have _____ oxidation state.

(ii) ClF_3 has _____ geometry.

(iii) Fluorides of carbon are collectively known as _____.

(iv) Dihyaric alcohols are known as _____. 2

(B) Choose the correct alternative :—

(i) Ethyl bromide is a _____

(a) Primary alkyl halide.

(b) Secondary alkyl halide.

(c) Tertiary alkyl halide.

(d) None of these.

(ii) The unit of magnetic moment is _____

(a) B. M. (b) cm^{-1}

(c) kg (d) m^3

(iii) Decomposition of H_2O_2 is _____

(a) First Order (b) Second Order

(c) Zero Order (d) Third Order

(iv) Which is the strongest oxidising agent ?

(a) F (b) Cl

(c) Br (d) I 2

(C) Answer the following in **one** statement :—

(i) What are epoxides ?

(ii) Define polarization.

(iii) What is Zero Order Reaction ?

(iv) What is Curie Point ? 4

UNIT – I

2. (A) Discuss the structure of BCl_3 on the basis of hybridization. 4

(Q) Discuss Gouy's balance method for determination of molar magnetic susceptibility. 4

(R) Define :

(i) Orientation polarization.

(ii) Dipole moment. 4

UNIT – VI

12. (A) Define :

(i) Rate constant.

(ii) Molecularity. 4

(B) Describe Ostwald's isolation method for the determination of order of the reaction. 4

(C) Show that half life period of first order reaction is independent of initial concentration of the reactant. 4

OR

13. (P) Define —

(i) Order of the reaction.

(Q) How will you prepare diethyl ether from —

(i) Ethyl bromide ?

(ii) Ethyl alcohol ? 4

(R) How will you prepare

(i) Ethylene oxide from ethylene ?

(ii) Styrene oxide from styrene ? 4

UNIT – V

10. (A) Define :

(i) Polar molecule.

(ii) Induced Polarisation. 4

(B) Explain the effect of temperature on magnetic susceptibility of diamagnetic, paramagnetic, ferromagnetic and antiferromagnetic substances. 4

(C) What are paramagnetic substances ? Give their characteristics. 4

OR

11. (P) If the magnetic moment of the substance is 6·9 B. M., calculate number of unpaired electrons. 4

(B) What is SHAB Principle ? How is it useful to predict the stability of complex ? 4

(C) Explain :

(i) Dipole – Dipole interaction.

(ii) Ion – Dipole interaction. 4

OR

3. (P) How is electronegativity related to Hardness and Softness of acids ? 4

(Q) Explain Fajan's Rules with respect to large and highly charged anions. 4

(R) Discuss the structure of BeF_2. 4

UNIT – II

4. (A) Write the configurations of IIA group elements. 4

(B) Explain Born Haber cycle. 4

(C) Explain water as an Universal Solvent. 4

OR

5. (P) Write any two reactions of liquid ammonia. 4

(Q) Discuss the structure and bonding in XeF_4 molecule. 4

(R) Explain the following :—

(i) Dielectric constant.

(ii) Dipole moment. 4

UNIT – III

6. (A) Explain Benzyne intermediate mechanism of aromatic nucleophilic substitution. 4

(B) What happens when

(i) Allyl chloride is treated with alcoholic KOH ?

(ii) Glycol is reacted with PCl_5 ? 4

(C) How will you prepare

(i) Ethylene glycol from ethylene ?

(ii) Nitroglycerine from glycerol ? 4

OR

7. (P) Explain the mechanism of Pinacol–Pinacolone rearrangement. 4

(Q) Chlorine in Vinyl chloride is less reactive towards nucleophilic substitution than that in allyl chloride. Explain why ? 4

(R) How will you prepare

(i) Benyl chloride from toluene ?

(ii) Allyl chloride from propene ? 4

UNIT – IV

8. (A) Give the following reactions of Phenol :

(i) Kolbe's Reaction.

(ii) Fries Rearragement. 4

(B) Explain Ring opening reaction of ethylene oxide in presence of acid. 4

(C) How will you convert —

(i) Diethyl ether to ethyliodide ?

(ii) Aniline to phenol ? 4

OR

9. (P) Explain the Acidic character of Phenol. 4